Title:
Superficial temporal artery pseudoaneurysm presenting as suspected sebaceous cyst

Author
Loren K. Rood
Department of Emergency Medicine
Indiana University School of Medicine

Case:
A 20 year old male presented to emergency department (ED) requesting to have a "cyst" his scalp drained. The patient stated he first noticed the cyst about 1.5 years ago, which seemed to develop after he was hit on the head during an altercation. He reported that it was drained about in this ED 6-8 months prior but did not resolve. On examination the left temporal scalp had a 2cm indurated cystic subcutaneous lesion that was minimally tender, without any drainage or overlying erythema. The patient was advised that it appeared to be sebaceous cyst, which would likely recur until formally excised. Due to his mild discomfort, he opted for incision and drainage pending his clinic referral. After prep and local anesthesia, incision yielded only brisk bleeding which was easily controlled with fingertip pressure but required suture placement for complete hemostasis. The lesion was felt to be faintly pulsatile while holding pressure. Point of care (POC) ultrasound evaluation performed with a high frequency linear array probe demonstrated the "cyst" (Figure 1) to be a superficial temporal artery (STA) pseudoaneurysm. Standard B mode imaging clearly showed turbulent blood flow (Figure 2). Color doppler imaging (Figure 3) demonstrated typical swirling of blood within the aneurysm (the "yin-yang" sign). Vascular surgery was consulted and arrangements made for outpatient excision of the lesion. At surgery approximately 1 month later, the lesion was confirmed to be a pseudoaneurysm.

Figure 1. Scalp lesion with gross appearance of typical sebaceous cyst

Figure 2. Ultrasound imaging revealed the superficial temporal artery aneurysm with turbulent blood flow.

Figure 3. Color Doppler imaging with typical yin-yang sign.

Discussion:
Superficial temporal artery aneurysms are uncommon vascular lesions. Pseudoaneurysms of the STA can develop after local trauma to the scalp (1,2) or operative procedures (3). True aneurysms are due to pathologic dilatation of all 3 layers of the vessel wall (4), while a pseudoaneurysm results from a contained blood leak from the artery typically secondary to local vessel trauma (3). It was thought that the STA may have been injured during the patient's previous I&D, but review of that record revealed that only blood (no purulent or sebaceous material) was

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obtained. The patient likely suffered a small injury to the vessel during the altercation he reported prior to development of the "cyst". Although typically referred to as STA aneurysms, lesions developing as a result of trauma are actually pseudoaneurysms (1). True STA aneurysms can develop spontaneously (4). Treatment typically involves surgical resection, but non-surgical options (such as thrombin injection, coils, and endovascular obliteration) have also been described (3).

Subcutaneous lesions can mimic one another and are often difficult to accurately diagnose clinically. Many lesions simply present with an indurated area with or without tenderness, redness, or visible drainage. POC ultrasound readily allows for differentiation of cellulitis, abscess, lipoma, lymph node, as well as vascular lesions (such as aneurysms and pseudoaneurysms), and hernias. A history of trauma to the region should increase suspicion for a vascular lesion (1,2). Increased availability and use of POC ultrasound in the ED can enhance diagnostic accuracy, and thus improve clinical care. Pseudoaneurysms usually demonstrate a characteristic circular blood flow within the lesion, referred to at the yin-yang sign on color doppler imaging (5).

This case is an illustrative example of an incorrect assessment of a subcutaneous lesion. That incorrect assessment led to an unnecessary and potentially hazardous procedure. This procedure would not have been performed if we had first performed point-of-care ultrasound (POCUS) to determine whether or not the lesion was a cyst, an abscess, or something else. Bedside ultrasound prior to the procedure would have provided the correct diagnosis, and does not expose the patient to intravenous contrast or radiation. Appropriate follow-up would have been arranged, and the ED visit would have been much shorter.

References:

1. The pulsatile head mass, 'uncommon things are sometimes common'. A case series. Staruch R, Sawyer O, Ellabban M. International Journal of Surgery Case Reports 2015;11:21–23
2. Post Traumatic Superficial Temporal Artery Aneurysm: Highlighting the Importance in History and Examination. Sawyer O, Staruch R, Ellabban M www.ePlasty.com Interesting Case, December 30, 2014
3. Superficial temporal artery pseudoaneurysm: a case report. Younus S, Imran M, Qazi R. www.frontiersin.org Frontiers in Surgery Oct 2015;2:51
4. Spontaneous true aneurysm of the superficial temporal artery presenting as an asymptomatic forehead mass. Zivkovic N, Jovanovic M, Markovic M, Milenkovic S. www.entjournal.com ENT-Ear, Nose & Throat Journal Sept 2015, E14-17.
5. The to and fro sign: the hallmark of pseudoaneurysm. Rozen G, Samuels D, Blank A. Isr Med Assoc J, 2001 Oct;3(10):781-2.

Figure 1. Scalp lesion with gross appearance of typical sebaceous cyst.

Figures 1 & 2. Available as supplementary files from: